Amendments to the Claims:

The below listing of claims replaces all previous listings and versions of claims in this application:

IN THE CLAIMS

1. (Currently Amended) A phase locked loop circuit, for providing an oscillating output signal at an output frequency, comprising:
a reference counter;
a loop counter;
a phase detector having a first input coupled to the reference counter and a second input coupled to the loop counter;
a voltage controlled oscillator having an input coupled to the output of the phase detector and an output for providing the oscillating output signal;
a feedback loop coupling the output of the voltage controlled oscillator to the input of the loop counter; and
delay circuitry, including a feedback loop, arranged to introduce in response to a change in the output frequency, a discrete coarse delay into a phase of an input signal provided to the phase detector, and an analogue fine delay into the phase of the input signal wherein the coarse delay and the fine delay effect phase compensation of the input signal ~~the output of the loop counter and/or the reference counter~~.

2. (Original) A phase locked loop circuit as claimed in claim 1, wherein the delay circuit temporarily introduces an off-set into the loop counter and/or the reference counter.

3. (Previously Presented) A phase locked loop circuit as claimed in claim 1, wherein the delay circuit comprises a variable delay component for introducing a continuously variable delay into the output of the loop counter and/or the reference counter.

4. (Previously Presented) A phase locked loop circuit as claimed in claim 3, wherein the delay circuitry comprises a detector for detecting when the variable delay component exceeds a threshold and control means for introducing a discrete delay in response to said detection.

5. (Previously Presented) A phase locked loop circuit as claimed in claim 3, wherein the delay circuit is arranged to compensate a variation in the discrete delay with a variation in the variable delay.

6. (Previously Presented) A phase locked loop circuit as claimed in claim 3, wherein the delay circuitry is arranged such that a maximum variable delay is substantially equal to a minimum discrete delay.

7. (Previously Presented) A phase locked loop circuit as claimed in claim 3, wherein the delay circuitry comprises a feedback loop which provides an input to the variable delay component that is dependent upon both the voltage at the input to the voltage controlled oscillator and the discrete delay introduced into the loop counter and/or the reference counter.

8. (Original) A phase locked loop circuit as claimed in claim 7, wherein the delay circuit temporarily introduces an off-set into the loop counter and/or the reference counter and comprises: a summation means for summing the introduced offsets; a digital to analogue conversion means for converting the total introduced offset into an analogue signal representing the total introduced discrete delay; and subtraction means for subtracting the analogue signal from a signal representative of the voltage at the input of the voltage controlled oscillator to produce the input to the variable delay component.

9. (Previously Presented) A phase locked loop circuit as claimed in claim 1, further comprising a shunt capacitor connected between a node between the phase detector and the voltage controlled oscillator and ground.

10. (Previously Presented) A phase locked loop circuit as claimed in claim 1, wherein the phase detector output is coupled to the input of the voltage controlled oscillator via an intervening loop filter consisting of a capacitor.

11. (Previously Presented) A frequency synthesiser comprising a phase locked loop circuit as claimed in claim 1.

12. (Currently Amended) A method of changing the frequency of an oscillating output signal comprising ~~the steps of~~:
adapting the reference counter and/or the loop counter of a phase locked loop; ~~and~~
introducing a discrete coarse delay into the phase input of a signal provided to a

frequency compensation means;
introducing an additional analogue fine delay into the phase of the input signal,
wherein the coarse delay and the fine delay are introduced to effect phase compensation of the input signal in response to a change in the frequency of the oscillating output signal ~~output of the loop counter and/or the reference counter~~.

13. (Original) A method as claimed in claim 12 further comprising the step of introducing a continuously variable delay into the output of the loop counter and/or the reference counter.

14. (Original) A method as claimed in claim 13, wherein a temporary variation of the discrete delay results in a corresponding permanent variation in the variable delay.

15. (Currently Amended) A frequency synthesiser, for providing an oscillating output signal at an output frequency, comprising:
frequency compensation means arranged to maintain the output frequency; and
feedback means arranged to introduce in response to a change in the output frequency, a discrete coarse delay into a ~~vary discretely the~~ phase of an input signal provided to the compensation means, and an analogue fine delay into the phase of the input signal, wherein the coarse delay and the fine delay effect phase compensation of the input signal.

16. (Original) A frequency synthesiser as claimed in claim 15, wherein the feedback means is additionally arranged to vary continuously the phase delay of the input signal.

17. (Original) A frequency synthesiser as claimed in claim 15, wherein the compensation means comprises: an input for receiving a first input signal; comparison means for comparing the first input signal and a second input signal; control means for controlling the output frequency in dependence upon the comparison; and a negative feedback loop for providing the second input signal.

18. (Original) A frequency synthesiser as claimed in claim 17, wherein the comparison means is a phase detector.

19. (Previously Presented) A frequency synthesiser as claimed in claim 17, wherein the control means comprises a capacitor, a voltage controlled oscillator having its input connected to the capacitor and means for sourcing and sinking current to said capacitor

and thereby control the output of said voltage controlled oscillator and the output frequency.

20. (Previously Presented) A frequency synthesiser as claimed in claim 17, wherein the negative feedback loop comprises programmable means for adjusting the second input signal.

21. (Original) A frequency synthesiser as claimed in claim 20, wherein the programmable means is a counter.

22. (Previously Presented) A frequency synthesiser as claimed in claim 17, wherein the feedback means is additionally arranged to continuously vary the phase delay of the first input signal.

23. (Previously Presented) A frequency synthesiser as claimed in claim 17, wherein the feedback means is additionally arranged to continuously vary the phase delay of the second input signal.

24. (Previously Presented) A frequency synthesiser as claimed in claim 22, wherein the feedback means comprises a negative feedback loop.

25. (Currently Amended) A phase locked loop circuit, for providing an oscillating output signal at an output frequency, comprising:
a reference counter;
a loop counter;
a phase detector having a first input coupled to the reference counter and a second input coupled to the loop counter;
a voltage controlled oscillator having an input coupled to the output of the phase detector and an output for providing the oscillating output signal;
a feedback loop coupling the output of the voltage controlled oscillator to the input of the loop counter; and
delay circuitry, including a feedback loop, arranged to introduce in response to a change in the output frequency, a discrete coarse delay into a phase of the first input signal provided to the phase detector, and an analogue fine delay into the phase of the first input signal wherein the coarse delay and the fine delay effect phase compensation of the first input signal ~~the output of the loop counter~~.

26. (Currently Amended) A method of changing the frequency of an oscillating output signal
comprising ~~the steps of~~:
adapting a loop counter of a phase locked loop; and
using a feedback loop to introduce a discrete coarse delay into the phase input of a signal provided to a frequency compensation means;
introducing an additional analogue fine delay into the phase of the input signal,
wherein the coarse delay and the fine delay are introduced to effect compensation of the input signal in response to a change in the frequency of the oscillating output signal ~~output of the loop counter~~.

27. (Currently Amended) A frequency synthesiser, for providing an oscillating output signal at an output frequency, comprising:
frequency compensation means comprising: an input for receiving a first input signal; comparison means for comparing the first input signal and a second input signal; control means for controlling the output frequency in dependence upon the comparison; and a negative feedback loop for providing the second input signal; and feedback means arranged to ~~vary discretely~~ introduce, in response to a change in the output frequency, a discrete coarse delay into the phase of the first input signal provided to the frequency compensation means and ~~to vary continuously~~ an analogue fine delay into the phase of the first input signal wherein the coarse delay and the fine delay effect phase compensation of the first input signal.

28. (Original) A frequency synthesiser as claimed in claim 27, wherein the comparison means is a phase detector.

29. (Previously Presented) A frequency synthesiser as claimed in claim 27, wherein the control means comprises a capacitor, a voltage controlled oscillator having its input connected to the capacitor and means for sourcing and sinking current to said capacitor and thereby control the output of said voltage controlled oscillator and the output frequency.

30. (Previously Presented) A frequency synthesiser as claimed in claim 27, wherein the negative feedback loop comprises programmable means for adjusting the second input signal.

31.(Original) A frequency synthesiser as claimed in claim 30, wherein the programmable means is a counter.

32. (Currently Amended) A frequency synthesiser, for providing an oscillating output signal at an output frequency, comprising:
frequency compensation means comprising: an input for receiving a first input signal; comparison means for comparing the first input signal and a second input signal; control means for controlling the output frequency in dependence upon the comparison; and a negative feedback loop for providing the second input signal; and feedback means arranged to ~~vary discretely~~ introduce, in response to a change in the output frequency, a discrete coarse delay into the phase of the second input signal provided to the frequency compensation means and an analogue fine delay into the phase of ~~and to vary continuously the phase delay of~~ the second input signal wherein the coarse delay and the fine delay effect phase compensation of the second input signal.

33. (Original) A frequency synthesiser as claimed in claim 32, wherein the comparison means is a phase detector.

34. (Previously Presented) A frequency synthesiser as claimed in claim 32, wherein the control means comprises a capacitor, a voltage controlled oscillator having its input connected to the capacitor and means for sourcing and sinking current to said capacitor and thereby control the output of said voltage controlled oscillator and the output frequency.

35. (Previously Presented) A frequency synthesiser as claimed in claim 32, wherein the negative feedback loop comprises programmable means for adjusting the second input signal.

36. (Original) A frequency synthesiser as claimed in claim 35, wherein the programmable means is a counter.

37. (Cancelled)

38. (Cancelled)